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KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT

PROCEDURE FOR CONDUCTING A SONAR SURVEY ON A SALT SOLUTION MINING WELL (CLASS III WELL)

Procedure #: UICIII-5

Narrative:

K.A.R. 28-43-7(d) states when calculations based upon a model theory approved by KDHE indicate that fifty (50) percent of the useful life of a well has been reached, the well or system shall be checked by the operator to determine the dimensions of the cavern developed by the solutioning and thereafter upon increments of each ten (10) percent of useful well life. This frequency is a minimum. Sonar frequency may be more stringent per permit requirements. A sonar survey approved by KDHE shall be used for this purpose. KDHE will also require a sonar when the dimension or configuration of the cavity would have a bearing on continued stability or if other problems are indicated. The schedule for the sonar shall be mutually agreed upon so KDHE may have the opportunity to witness the sonar. The sonar shall not be conducted until plan and schedule approval has been obtained from KDHE. The following procedure for developing a sonar plan and conducting a sonar will assist in ensuring an acceptable determination of the dimensions and configuration of the cavity is achieved. It is the operator's responsibility to conduct a sonar survey that satisfies the requirements of K.A.R. 28-43-7(d) and KDHE.

Procedure:

1. List the well identification number and location of the well to be sonared.

2. The sonar must be conducted in the cavity with the tubing removed from the cavity.

3. Provide a schematic of the well configuration at the time the sonar will be conducted including salt top, cavity top and casing seat.

4. Describe the action that will be taken if the sonar tool will not pass through the well and/or cavity.

5. The sonar survey results and interpretation shall be submitted to KDHE within 30 days of completing the survey. The interpretation must be made by a person with the technical expertise and knowledge to evaluate the sonar survey results. The interpretation should include a discussion of the dimensions and configuration of the cavity, the relationship of the cavity to adjacent cavities, a description and explanation of any anomalies, a description of those parts of the cavity blocked from view by fallen shale layers and a description of any changes in operation necessary to obtain desirable cavity dimensions and configuration. An updated diagram depicting the maximum cavity radii for the well sonared in relation to the maximum cavity radii for nearby wells shall be provided. Maximum radii information from any previous sonar surveys shall also be included on the diagram to provide a graphic display of the cavity growth and development over time. An example of an acceptable diagram is attached. Cross-sectional views should also include a comparison to previous sonar results. An example of an acceptable cross-section is attached.

If the sonar and interpretation cannot be submitted to KDHE within the 30 day time period, the permittee must then request in writing a time extension from KDHE. The request must include both an explanation of why the extension is needed and a proposed schedule for submitting the sonar results and interpretation to KDHE. The request will be reviewed by KDHE to determine if approval can be granted.

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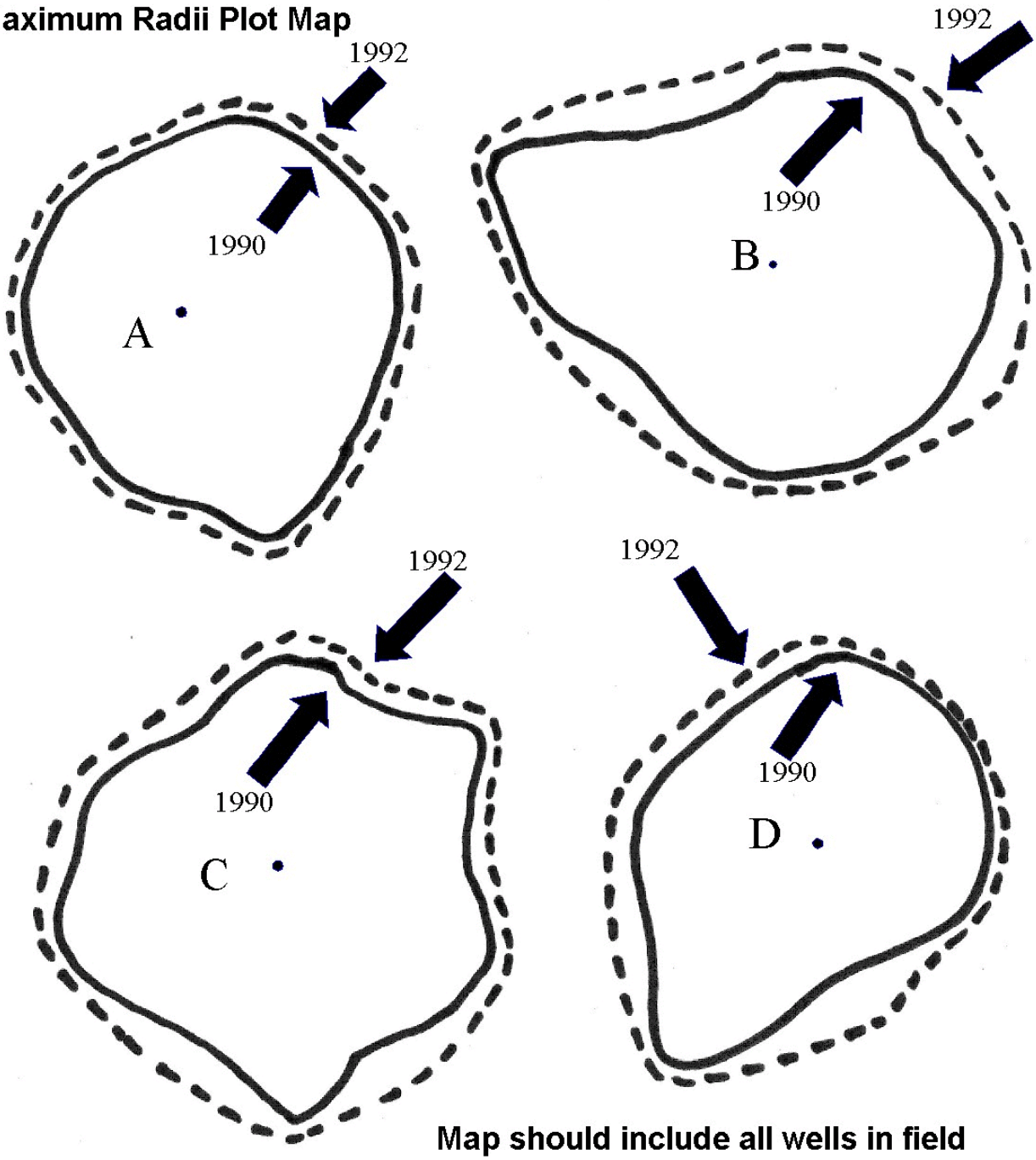
Maximum Radii Plot Map



Map should include all wells in field

CROSS SECTIONAL VIEW